

To catheterize the CS, a sheath is used in first intention in 81%. CS angiography is performed in 90%, with an inflated balloon in 59%.

In case of atrial fibrillation with CHA2DS2-VASc < 2, 38% implant without VKA interruption, 57% stop VKA without substitution, and unfractionated heparin (UH) or low weight heparin (LWH) substitution is chosen in 5%, vs respectively 69% and 11% and 19% if CHA2DS2-VASc > 4.

**Conclusion:** Most of implantations are performed under local anesthesia. Left sided is preferred, especially in case of CRT-D implantation. Most physicians combine the venous accesses, start with the RV septal lead, and perform a CS angiogram via an inflated balloon. In AF patient, VKA interruption is preferred in low risk patients but not in high risk ones. Few implanters choose VKA substitution.

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### Routine face-profile fluoroscopic screening may be useful for earlier detection, monitoring and management of externalized conductors in patients implanted with Riata leads

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Increased rates of structural abnormalities have been reported in the Riata family of implantable cardioverter-defibrillator (ICD) leads. The reliability of defibrillation leads with insulation damage, or abraded cables that are not immediate cause of failure is unknown. The incidence of these defects can be underestimated due to the absence of abnormal electrical parameters detected by regular ICD interrogation. Little is known about the time lag for emergence of functional abnormalities in such leads.

**Methods:** Forty eight patients who received small-caliber leads of the Riata family (models 1570, 1572, 1580, 1582, 7000, 7002) in our institution between May 2002 and March 2008 were systematically called for an additional visit including face-profile thoracic fluoroscopy to ascertain integrity of the leads followed by routinely repeated fluoroscopies at every six-month visits. We assessed the prevalence of insulation defects with externalized cables and their relation with adverse events requiring lead revision. We tried to evaluate the time lag for emergence of their electrical dysfunction.

**Results:** Thirty five patients, mean age = 64 ± 10 years, with at least 7-month completed fluoroscopy follow-up were included in analysis. After 55-month mean follow-up, 57% of patients completed 2 or more spaced fluoroscopies. Externalized conductors were identified in 7 (20%) patients after a 48-months (12-114) mean delay and in 4 (11%) cases the images were classified as borderline. Three of 7 patients with insulation damage required lead replacement for the reason of clinical adverse events. In two other patients an increase of abrasion was observed on repeated fluoroscopy without changes in electrical parameters.

**Conclusion:** Insulation damage with externalized conductors was identified in 20% of patients implanted with Riata leads. Routine fluoroscopic screening allowed earlier detection of these defects and may be useful for their closer monitoring and better management.

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### Is myotonic dystrophy part of the Brugada syndrome? Results of ajmaline challenge in Steinert disease

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**Introduction:** Both type 1 Myotonic Dystrophy (Steinert disease) and Brugada syndrome may be complicated by conduction disturbances and sudden death. ST elevation in the right precordial leads is the hallmark of Brugada syndrome but may be seen in some myopathies. Mutations in DMPK gene in Steinert pts may lead to cytosolic accumulation of mutated toxic RNA or altered alternate splicing of some RNA potentially causing sodium channel dysfunctions. The prevalence of Brugada ECG pattern in Steinert disease is unknown.

**Methods:** we perform ajmaline challenge test (1 mg/kg over 5 min) during electrophysiological (EP) testing in a population of 44 Steinert disease pts

(27 men, 41 ± 15 years old) without ST elevation at baseline. Left ventricular EF was normal in each case. The presence of type 1 ST elevation (> 2 mm J elevation with coved ST and negative T wave) after ajmaline challenge was correlated to clinical, ECG and electrophysiological variables.

**Results:** 8 pts (18%) present type 1 ST elevation in the right precordial leads after ajmaline infusion. Brugada pattern was more often seen in men: 7/27 (26%) vs 1/17 (6%) (p=0.09). Patients with negative ajmaline test presented more often with fascicular block: 13/35 (27%) versus none (p=0.03).

Brugada pattern was not correlated to age, symptoms, PR interval, QRS, QT or QTc durations, HV interval (at baseline or after ajmaline), presence of bundle branch block, of late potentials at SA-ECG or inducibility of ventricular arrhythmias at EP study.

Nine pts were implanted with a pace maker and four with an ICD. Significant or symptomatic bradycardia did not happen in any non implanted pts, while only one pt presented with malignant ventricular arrhythmias during the 6.3 ± 2.6 years follow-up (ventricular fibrillation with hypokalemia in an ajmaline negative pt).

**Conclusion:** Brugada ECG pattern can be elicited by class 1 drug in 18% of Steinert disease pts and especially in men. Presence of type 1 ST elevation under class 1 drug in Steinert disease do not seem to have some significant clinical or ECG correlations.

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### A simple method to implant epicardial AICD using two separated coils

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**Purpose:** Surgical epicardial AICD implantation has been quite abandoned since development of endocardial leads and decrease in AICD size. Epicardial patches did not improve since 30 years, are rigid and need to be sewed to the epicard which favors bleeding. In some rare cases, epicardial AICD implantation remains indicated. Therefore we tested a new simple implant technique in 5 patients undergoing open chest surgery through a median sternotomy.

**Methods:** In 3 cases surgery was performed for percutaneous infected lead extraction failure. The two other patients required surgical operation and AICD implant (one for mitral valve regurgitation, one for tricuspid repair). A screw-in bipolar pace/sense lead (St Jude MyodexTM 1084T) was placed on the right ventricular free wall and two defibrillation leads (Medtronic Transvene®6937) were respectively sewed on the pulmonary artery trunk and on the diaphragmatic wall of the right ventricle and then connected to an AICD (Biotronik Lumax 540) placed in an abdominal pocket.

**Results:** Best defibrillation configuration (31 J tested) was obtained with a shock delivered between the two coils (AICD passive), from the inferior one to the superior one. There were no major cardiovascular complications. Clinical and telemonitoring follow up (mean 10 months) showed stable ventricular stimulation and detection thresholds as well as lead and coil impedances. No arrhythmias occurred.

**Conclusions:** Epicardial AICD implantation is feasible in a simple way. Long term follow up is needed to confirm post operative results.

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### Pacemaker patients' perception of daily life activities and medical follow-up: a french survey

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**Material and methods:** We carried out a multicenter survey in 8 French centers. Each patient received a questionnaire to evaluate his perceptions on information and consent, risks associated with pacemaker implantation and ability to perform various routine activities.

**Results:** We included 185 patients. The mean age was  $75.4 \pm 10.5$  years.

A large number of patients considered many routine activities as unsafe, such as sleeping on the side of the pacemaker (12%), swimming (15%), driving automobiles (17%) and passing through metal detectors (47%). Patients had also misconceptions about using induction hobs (38%) and arc welding equipment (32%).

As regards medical imaging, 38% did not know if they could undergo MRI exams. As regards medical follow up, 11% of patients thought they did not need heart medications and 17% that they were exempt from monitoring by a cardiologist. In univariate analysis, the factors associated to misconceptions about pacemakers were an age above 75 years and a primary implantation.

**Conclusion:** The results of our study highlight patients' misperceptions on life with a pacemaker. This should lead cardiologists to better inform patients at the time of pacemaker implantation.

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### Long-term follow-up after implantable loop recorder in patients with syncope: results of a french Survey

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**Background and objective:** Despite recent advances in diagnostic procedures, syncope remains unexplained in 15 to 35% of patients. If implantable loop recorder is a validated diagnostic tool for unexplained syncope, results of this strategy are largely issued from randomized studies. We lack the results of surveys. The aim of this study was to report a single center experience with implantable loop recorder, in patients with unexplained syncope.

**Methods and results:** A device (Medtronic Reveal) was implanted in 30 patients between January 2009 and January 2012. 80% of patients experienced recurrent syncope and 20% were implanted after a first syncope with a suspicion of an arrhythmic cause. During a mean follow-up of  $10.5 \pm 8.5$  months after device implantation, loop recording definitively determined that an arrhythmia was the cause of symptoms in 9 patients (30%).

Thirteen patients (41%) experienced syncope or pre-syncope. In 6 of the 13 patients with syncope during follow-up no diagnosis could be made (non arrhythmic causes- one patient has been diagnosed as presenting epilepsy and 5 as having hypotensive vasovagal syncope). In 7 patients, the ILR lead to the diagnosis showing an arrhythmic etiology. Two other patients presented an abnormal ILR results without symptoms.

Diagnosis included sinus arrest in 3 patients, bradycardia in 1 patient, advanced atrio-ventricular block in 3 patients and ventricular arrhythmia in 2 patients. Therapy was instituted in all patients, in whom an arrhythmic cause was found except one who refused the therapy (6 pacemaker and 2 implantable cardioverter defibrillator implantation).

**Conclusion:** In this registry, implantable loop recorder implantation led to the diagnosis of an arrhythmic cause in 30% of patients. This percentage seems to be lower than those reported in randomized studies. These results should be confirmed in a larger multicentric survey.

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### Interest of a simple method for coronary sinus lead tunneling from contralateral to homolateral subclavian vein in upgrading indications

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**Introduction:** We developed the usage of a simple tunnelling method from contralateral access to the device in case of homolateral subclavian access failure when an additional lead is needed.

**Goal of the study:** long term evaluation of feasibility and safety of this tunneling strategy.

**Method:** From September 1998 to September 2011, a coronary sinus (CS) lead was implanted through contralateral access after failure of homolateral to the device implantation in 31 consecutive patients (19 males  $72 \pm 7$  yo). Indications were thrombosis 14 and failure to catheterize CS 17. All these patients were already implanted with a single or double chamber pacemaker or internal cardiac defibrillator and were referred for upgrading to biventricular pacing. The packaging sheath of a simple conventional catheter (plastimed) was introduced from one side to the other under local anesthesia after scissors dissection under local anesthesia. Tunneling of coronary sinus lead was performed through the sheath which was then withdrawn.

**Results:** Success tunneling procedure rate was 100%. Tunneling time was  $3 \pm 2$  mn. Complications related to the procedure: 2 cases of xylocaine overdose needed temporary ventilation assistance at beginning of experience. 1 early dislodgment needed replacement, 2 cases of early battery wear because of low impedance of the CS lead. No hematoma, no acute or late pain complaint, no lead infection were reported.

**Conclusion:** Contralateral implantation through a simple packaging sheath is a simple and safe option in case of homolateral access failure in upgrading indications.

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### Prevalence of early repolarization in congenital long QT syndrome A combination of early and delayed repolarization

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**Introduction:** early repolarization (ER) in Brugada or short QT syndrome is common and has been associated to a less favourable outcome. Even if apparently paradoxical, ER can also be seen in long QT (LQT) but prevalence and correlations to other variables are unknown.

**Methods:** 12 lead ECG of 37 LQT pts (19 men,  $39 \pm 21$  yo) and 80 matched controls were reviewed. LQT pts were selected by a positive genetic testing (n=27) or by showing abnormal T wave and long QT interval (n=10) either spontaneously or during epinephrin infusion. ER was defined by  $>1$  mm J point elevation in the inferior or lateral leads with notch or slurring pattern. Presence of ER was correlated to the clinical and ECG characteristics and results genetic analysis.

**Results:** QT was  $409 \pm 53$  msec in pts and  $372 \pm 24$  in controls ( $p < 0.0001$ ) (QTc  $476 \pm 52$  vs  $392 \pm 26$  msec,  $p < 0.0001$ ). Two LQT pts presented with resuscitated sudden death and 4 with syncope at the time of diagnosis.

14/37 LQT pts (38%) had ER compared to 17/80 (21%) controls ( $p = 0.05$ ).

ER was more frequent in men (12/19, 63%) compared to women (2/18, 11%) ( $p = 0.001$ ) but was not correlated to age. Pts with ER had slower heart rate ( $63 \pm 10$  vs  $75 \pm 18$  bpm,  $p = 0.02$ ).

ER was not correlated to symptoms or cardiac events (no ER in the 2 pts with SD and in 2/4 pts with syncope).

QT were longer in pts with ER ( $450 \pm 68$  vs  $397 \pm 54$  msec in V2,  $p = 0.01$ ) but there was no correlations between ER and corrected QT intervals.

ER was more often seen in pts with or without mutations although non significantly (8/27 vs 6/10,  $p = 0.09$ ), but there was a trend toward more frequent ER in case of HeRG mutations (6/12) than KCNQ1 or KCNJ2 mutations (2/11 and 0/4) ( $p = 0.09$ ).

**Conclusion:** ER is very common in LQT pts and is related to the gender and to the heart rate but not to the corrected QT duration. ER does not seem to be correlated to cardiac events in this series but may be linked to some gene mutations. Further studies are needed for demonstrating additional mutations/variants or the existence of an early transient voltage gradient due to altered kinetics in muted potassium channels with loss of function.